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PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

Process for Producing Fast Dyeings and Printings on Animal Fibres by Means of Acid Mordant Dyestuffs.

We, DURAND & HUGUENIN A.G., a body corporate organised according to the laws of Switzerland, of 40, Fabrikstrasse, Basle, Switzerland, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

Acid mordant dyestuffs could hitherto be sufficiently fixed in printing on wool with chromium mordants only after a steaming operation of long duration, namely of one hour and even longer. In the case of certain articles however a long steaming operation is a disadvantage, quite apart from the consumption of time and of steam in that in over printing on light ground shades, for example, the ground shade becomes yellow.

The present invention consists in a process whereby acid mordant dyestuffs can be fixed on wool so that they are completely fast by means of a short steaming operation, such as steaming for 8 minutes in a Mather-Platt apparatus. For this purpose it has been found necessary to use in the printing paste a substantial proportion, namely, at least 4 per cent., of a non-volatile organic carboxylic acid, such as oxalic acid, tartaric acid, citric acid, adipic acid and the like, whereby the acid conditions which promote the fixation of the dyestuff on animal fibres are apparently maintained throughout the whole steaming operation. The simplest procedure consists in adding a sufficient quantity of such an acid to the printing paste. Printing pastes which contain free acid are, however, frequently insufficiently stable. The desired result can also be attained by forming the acid in the printing paste by dissociation during the steaming operation; for this purpose there may be added to the paste at least 4 per cent. of, for example, an ammonium salt of the acid or a corresponding chromium salt, such as chromium oxalate, chromium tartrate, chromium citrate and so on. It is also possible to combine these various possibilities with one another. Thus, for example, the addition of a free non-

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volatile organic carboxylic acid to a printing paste containing an ammonium salt or a chromium salt of such an acid, or both, is useful for the purpose of the invention.

Besides having the advantage that it shortens the duration of the steaming operation, the process in accordance with the invention leads to prints which are appreciably fuller and have an improved fastness to rubbing. In most cases these results can be enhanced by the simultaneous use of urea or thiourea in the printing paste.

The process of the invention is applicable not only in the case of wool, but also in the case of silk and the like and to animal fibres in general. The process is useful not only in actual printing processes but also in the production of padded dyeings on the aforesaid fibres.

In hitherto known printing prescriptions the use of, for example, ammonium oxalate, oxalic acid or tartaric acid has already been indicated. However, the quantity of these substances hitherto used, namely, up to at most about 3 per cent., was evidently insufficient for the purpose of the present invention, since in the case of printing acid mordant dyestuffs on wool a steaming operation of 1—2 hours was always necessary for completely fixing the dyestuff. In the printing process of the present invention ammonium oxalate or another of the aforesaid ammonium salts is added to the printing paste in quantities of at least 4 per cent.

The following Examples illustrate the invention the parts being by weight:—

EXAMPLE 1.

	Parts.	
New Chromazurine HB (compare British Specification No. 301,329, Example 1)	- - 60	
Urea - - - - -	- - 60	
Hot water - - - - -	- - 190	100
Tragacanth thickening - - - - -	- - 550	
Ammonium oxalate (solid) - - - - -	- - 50	
is added to the hot mixture and dissolved; the whole is cooled and there are added Chromium acetate solution. (20° Bé.) - - 90		105
Total		1000

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EXAMPLE 2.

	Parts.
Chromocitronin R (Schultz Farbstofftabellen 7th Edition, No. 432)	30
Urea	60
Hot Water	170
Tragacanth thickening	600
Ammonium oxalate (solid)	50
is dissolved in the hot mixture; the latter is cooled and there are added Chromium acetate solution (20° Bé.)	90
Total	1000

EXAMPLE 3.

	Parts.
Chromerhodin BR (Schultz Farbstofftabellen 7th Edition, No. 878)	30
Urea	60
Hot water	170
Tragacanth thickening	600
Ammonium oxalate (solid; dissolved hot)	50
Chromium acetate solution (20° Bé.)	90
Total	1000

EXAMPLE 4.

	Parts.
Chromocitronin R	30
Water	260
Tragacanth thickening	570
Ammonium tartrate (solid)	50
Chromium acetate solution (20° Bé.)	90
Total	1000

EXAMPLE 5.

	Parts.
Chromocitronin R	3
Urea	6
Water	22
Tragacanth thickening	60
Ammonium oxalate	5
Chromium tartrate	4
Total	100

Woollen material is printed with a printing colour prepared as described in any of the foregoing Examples, dried, steamed for 8 minutes, washed and dried. There are thus obtained intense blue, yellow or rose prints which are fast to rubbing.

In quite an analogous manner prints can be produced on natural silk material.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A process for the production of fast dyeings and printings on animal fibres by means of acid mordant dyestuffs, wherein the fibrous material is printed with or padded in a printing paste or padding solution containing a non-volatile organic carboxylic acid or a compound thereof which dissociates easily during steaming, in a quantity of at least 4 per cent., and then subjecting the printed or padded material to a short steaming operation in order to fix the dyestuff.

2. A process as referred to in Claim 1, wherein the printing paste or padding solution also contains urea or thiourea.

3. A printing paste for printing animal fibrous material with acid mordant dyestuffs which are to be fixed by steaming, containing besides the usual ingredients at least 4 per cent., of a non-volatile organic carboxylic acid or a compound thereof which yields the acid during steaming, particularly an ammonium salt or a chromium salt of the carboxylic acid, and if desired containing also urea or thiourea.

4. Animal fibrous material which has been dyed or printed by the process referred to in Claim 1 or Claim 2.

Dated this 11th day of May, 1933.

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